Proposed Amendment for Discussion Not for Entry Into Record

AMENDMENTS TO THE SPECIFICATION:

Please add the following two new paragraphs before paragraph [001]:

[000.1] **TITLE OF THE INVENTION**

[000.2] Connection Package for High-Speed Integrated Circuit.

Please replace paragraph [002] with the following amended paragraph:

[002] The present application is related to another application, entitled SINGLE AND MULTIPLE LAYER PACKAGING OF HIGH-SPEED/HIGH-DENSITY ICS, Application No. [[_____]] 09/990,247, filed concurrently on even date, and also assigned to the Assignee of the present invention. The related application is incorporated by reference herein.

Please replace paragraph [037] with the following amended paragraph:

[037] Figure 3 (a) illustrates a simplified diagram of a partial view of an exemplary single-layer substrate with transmission lines for a high-speed integrated circuit. The high-speed integrated circuit ("IC") 200 is positioned in recess 202 formed typically toward the center of substrate 201. The IC 200 has signal pads 220, 225 at its outer edges. Transmission lines, e.g., microstrips 210, 215, are formed to receive bonding wires from signal pads 220, 225 for transmission to external terminals 230, 235. The microstrips 210, 214 are typically identical in size and shape at the inner edges of the substrate 201 near the signal pads 220, 225 (e.g., area 213). For a high-speed signal connected through a GPPO connector, its width at the connector end of 230, 235 should preferably match the width of the conductor core diameter of the GPPO connectors 231, 236. However, such width, at the IC end, will encroach on neighboring transmission lines, thus limiting the number of transmission lines that can support the signal pads

Proposed Amendment for Discussion Not for Entry Into Record

from the IC. However, simply narrowing the width of the transmission line at the IC end will cause impedance discontinuity for the overall transmission path, since a reduction in width results in reduced capacitance to ground, which increases the transmission line's characteristic impedance based on the equation: $Z = 1 / vC$, where Z is impedance, v is velocity of the signals and C is the capacitance per unit length. To maintain impedance continuity for a typical 50-ohm transmission line, the capacitance must be compensated by some other means. In accordance with one embodiment of the present invention, the thickness of the substrate 201 is substantially identical to the width of the dielectric "ring" portion of the cylindrical GPPO connectors 231, 236. This provides a smooth transition between the ground plane at the bottom of the substrate and the ground connection located at the outer cylinder portion of the GPPO connectors. It should be noted that the term "microstrip," "transmission line," [["stripeline,"]] "stripline" or the like is used to describe or claim either a signal path or a power or ground path. It may have various shapes, including, without limitation, lines or no particular patterns (e.g., Figures **12(d), (h)**).

Please replace paragraph [043] with the following amended paragraph:

[043] As can be appreciated by those skilled in the art, for a CLC network, the impedance is determined by: [[$Z = (L/C)$]] $Z = \sqrt{(L/C)}$, where $C = C_p + C_s$. To maintain the characteristic impedance Z at, say, 50 ohm, as is the case for a high-speed transmission path, with $L = 0.170$ nH contributed from the bonding wires, the value of C needs to be around 70 fF. If the capacitance C_p from the signal pad is about 35 fF, C_s from the microstrip needs to be 35 fF. To achieve such additional required capacitance, or any required value under different circumstances, the width of a portion 610, 615 of the microstrips can be increased, as shown in Figure 6, to achieve the desired effective value of 35 fF. The widened portion 610, 615 is located near the signal pads 600, 605 in an area that receives the bonding wires. The size and shape of the portion 610, 615 are typically identical. The precise amount of widening, as well as its extent lengthwise, can be readily computed using the aforementioned microwave design tool. In Figure 6, while the portion 610, 615 is rectangularly shaped, it is not limited to that shape and

Proposed Amendment for Discussion Not for Entry Into Record

may have other shapes. Also, while portion 610, 516 is symmetrically situated along each of the microstrips, it may not be symmetrical in other embodiments.